

# COBALT



Cobalt C-30 Fully-Featured Exciter  
4 Plug-in 2.2 kW amplifiers  
Control Unit  
Optional: Second Exciter

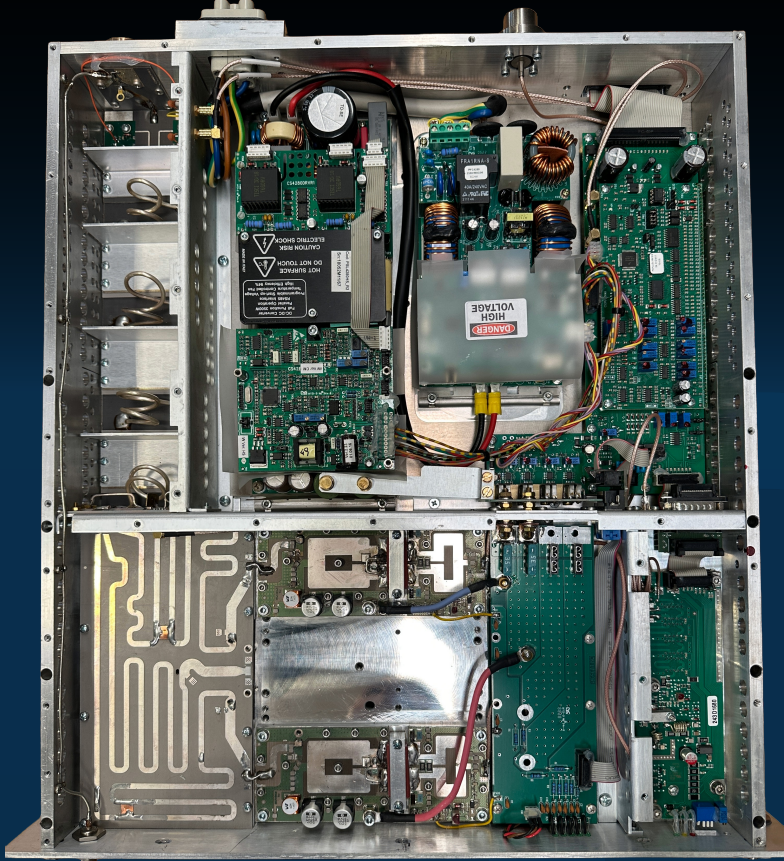
## CP-8000 Fully Featured FM Transmitter

Single or Dual COBALT Exciter

Datasheet and Specifications

Specifications are subject to change without notice

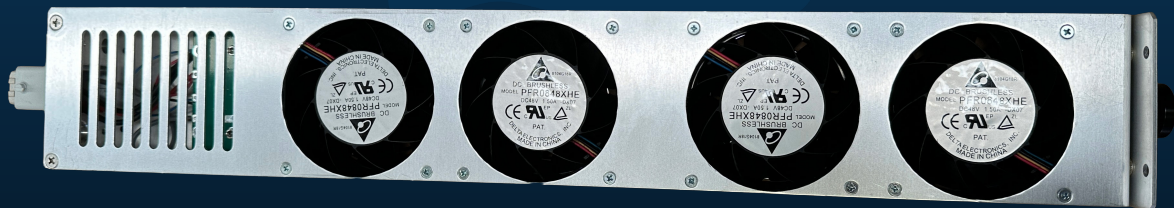
## CP-8000 Fully Featured FM Transmitter



Hotplug RF module  
Standard: 2 RF pallet  
Option: 3 RF pallet



Electromechanical section



Hot swap cooling system  
With each module



Hot swap Power Supply

## FEATURES

Full-band tunable across 87.5–108 MHz

70% efficiency with switching-mode power supply and automatic power control

Hot-pluggable, RF power modules (5x 2.2 kW)

Designed for 24/7 continuous operation

Comprehensive protection: high VSWR, overdrive, overcurrent, overheating

Exciter Compliant with IEC, ETSI, CCIR, FCC (incl. FCC Part 73 LPFM & IC Canada)

Supports mono and stereo broadcasting with direct digital synthesized modulation

Integrated 4-band audio processor with ITU-R BS412.9 limiter

Dynamic UECP-compliant RDS encoder

Digital MPX (AES192)

Audio failover, silence detection, and USB backup audio player

Shoutcast / Icecast stream input support

GPS synchronization for SFN operation

Front panel RGB display with full system monitoring

Remote control via Ethernet (HTTPS) and SNMP (v1/v2c/v3)

Web-based audio monitoring and control

Advanced automation, scheduling, and configuration tools

Emergency stop button

## Other available options

MicroMPX

MicroMPX SFN

2wcom MOIN CODEC

6 Band Audio Processor

FM Tuner

## AP-8000 RF Amplifier Parameters

### GENERAL

|                                    |                                                          |
|------------------------------------|----------------------------------------------------------|
| Frequency range                    | 87.5 - 108 MHz                                           |
| Rated output power                 | 8 kW + 10%                                               |
| Driver power for rated output      | 30 W                                                     |
| VSWR                               | 1.4:1 with automatic fold-back at higher VSWR            |
| Asynchronous AM S/N Ratio          | Typically > 70 dB                                        |
| Synchronous AM S/N Ratio           | Typically > 55 dB                                        |
| Harmonics suppression and Spurious | Typically < 85 dB                                        |
| RF Harmonics                       | Exceeds ETSI/CCIR/FCC requirements                       |
| RF Spurious                        | Exceeds ETSI/CCIR/FCC requirements                       |
| Environmental working conditions   | -10 °C to + 50 °C / 95% relative Humidity non condensing |

### POWER REQUIREMENTS

|                          |                                                                                                    |
|--------------------------|----------------------------------------------------------------------------------------------------|
| AC Power Input           |                                                                                                    |
| AC Supply Voltage        | 400V ±10% AC Three-Phase 3F+N<br>230V ±10% AC Three-Phase 3F+N<br>230V ±10% AC Mono-Phase 50/60 Hz |
| Active Power Consumption | about 11 kW                                                                                        |
| Power factor             | > 0.95                                                                                             |
| Overall Efficiency       | 71/73 %                                                                                            |
| Connector                | Terminal Block Standard                                                                            |

### MECHANICAL DIMENSIONS

|                           |                                 |
|---------------------------|---------------------------------|
| Physical Dimensions LxHxW | 40U: 685 mm x 1935 mm x 1000 mm |
| Weight                    | about 290 kg                    |
| Cooling                   | Forced, with internal fan       |
| Acoustic Noise            | < 75 dBA                        |

### OUTPUTS

|           |                                 |
|-----------|---------------------------------|
| RF Output | 50 Ohm (1+5/8" EIA flange type) |
|-----------|---------------------------------|

## C-30 Colbalt Exciter Parameters

### GENERAL

|                         |                                  |
|-------------------------|----------------------------------|
| Output Power (W)        | 30                               |
| Range (W)               | 5-30                             |
| RF Output connector     | N-Type (Female)                  |
| Input ACV @ 50/60Hz     | 100-240 (277 North America only) |
| Power Connector         | IEC 13A filtered                 |
| Power consumption       | ~101W @ max power                |
| AC-RF efficiency typ    | ~30%                             |
| Dimensions WxDxH (inch) | 19 x 15 x 1RU (1.75")            |
| Dimensions WxDxH (cm)   | 48.3 x 38 x 4.45                 |
| Weight                  | 3.7kg / 8.14lb                   |

### MODULATOR

|                                |                                                                                     |
|--------------------------------|-------------------------------------------------------------------------------------|
| Transmitter type               | Solid-state FM Stereo transmitter                                                   |
| Modulator                      | Direct-to-channel (DDS)                                                             |
| RF Output Frequency Range      | VHF Band II, 87-108MHz                                                              |
| RF Frequency Steps             | 100kHz                                                                              |
| Frequency Stability            | ±1 ppm or ±150Hz range with internal 10MHz clock reference                          |
| FM Modulation Range Capability | 75kHz default, 100% modulation user adjustable up to 105kHz<br>140%, maximum 300kHz |

### RF

|                                      |                                                                                                                               |
|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| Power Stability                      | ≤ ± 0.25dB                                                                                                                    |
| Asynchronous/AM noise                | ≤ -60dB                                                                                                                       |
| Synchronous AM s/n ratio             | ≤ -60dB                                                                                                                       |
| RF Harmonic and Spurious Suppression | Meets ETSI requirements Fully protected against gradual or sudden VSWR condition Proportional power reduction from VSWR 1.5:1 |
| VSWR operation                       |                                                                                                                               |

### STEREO ENCODER

|                         |                                                                        |
|-------------------------|------------------------------------------------------------------------|
| Performance             | 400Hz/1kHz test tones at modulation level ≤75kHz                       |
| Modes                   | Stereo, Mono L+R, Mono L, Mono R                                       |
| Frequency response      | 20Hz-15kHz ±0.02dB                                                     |
| Pre-emphasis            | 0, 50 or 75µs                                                          |
| Pilot tone              | 19kHz, adjustable level 0-12%                                          |
| Subcarriers suppression | ≤ -70dB                                                                |
| Stereo Suppression      | ≥75dB AES/EBU input                                                    |
| Stereo SNR              | ≥70dB Analogue input                                                   |
| Stereo THD+N            | ≥80dB with 75us de-emphasis ≥75dB without de-emphasis on both inputs   |
| Crosstalk               | <0.03% ≥70dB, between L+R and L-R due to channel matching, both inputs |

### MONO PERFORMANCE

|                    |                                                                  |
|--------------------|------------------------------------------------------------------|
| Frequency response | 20Hz - 15kHz ±0.02dB                                             |
| Pre-emphasis       | 0, 50 or 75 µs                                                   |
| Mono SNR           | ≥100dB, with 75us de-emphasis                                    |
| Mono THD+N         | ≤0.002% analogue input, ≤0.001% AES input, with 75us de-emphasis |

### ANALOGUE AUDIO PERFORMANCE

|                    |                                                               |
|--------------------|---------------------------------------------------------------|
| Frequency response | 10Hz-53kHz ±0.03dB                                            |
| FM SNR             | 53kHz-70kHz ±0.3dB                                            |
| THD+N              | ≥90dB, with 75us de-emphasis<br>≤0.003% with 75us de-emphasis |

### DIGITAL

|                    |                                                                               |
|--------------------|-------------------------------------------------------------------------------|
| Frequency response | 0-90kHz ±0.005dB ≥100dB, with 75us de-emphasis ≤ 0.001% with 75us de-emphasis |
| FM SNR             |                                                                               |
| THD+N              |                                                                               |

### AUDIO INPUTS

|          |                                                                                                                                               |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Analogue | 2 x XLR female, 10kΩ impedance, level adjustable 0-24dBu AES/EBU via RJ45 per StudioHUB+ Level adjustable -20-0dBFS, sampling rates 32-192kHz |
| Digital  |                                                                                                                                               |

### AUDIO OUTPUT

|                |                                                                                        |
|----------------|----------------------------------------------------------------------------------------|
| Headphones Out | 14" (6.3mm) female stereo socket software adjustable volume minimum load impedance 16Ω |
|----------------|----------------------------------------------------------------------------------------|

### WIDEBAND INPUTS

|              |                                                                                                                                  |
|--------------|----------------------------------------------------------------------------------------------------------------------------------|
| Analogue MPX | BNC, 10kΩ impedance, level adjustable 0-12dBu AES/EBU via RJ45 per StudioHUB+ level -20-0dBFS, sampling rate 192kHz left channel |
| Digital MPX  |                                                                                                                                  |
| Analogue RDS | BNC, 10kΩ impedance, level adjustable from 0.1-10Vpp                                                                             |

### WIDEBAND OUTPUTS

|                |                                              |
|----------------|----------------------------------------------|
| Analogue MPX   | BNC, 10Ω impedance, level adjustable 0-12dBu |
| Analogue Pilot | BNC, 10Ω impedance, level adjustable 0-12dBu |

### RDS GENERATOR

|           |                                                        |
|-----------|--------------------------------------------------------|
| Type      | Fully Dynamic RDS/RDS2/RBDS Generator                  |
| Protocols | ASCII commands, UECP protocol and X-Command Multi-port |
| Ports     | UART over USB-B & Ethernet                             |

### WIDEBAND INPUTS

|                            |                                                                                                |
|----------------------------|------------------------------------------------------------------------------------------------|
| 10MHz input                | BNC, 50Ω terminated                                                                            |
| 1PPS input                 | BNC, 50Ω terminated                                                                            |
| RF sample output           | SMA, 50Ω, -30dBc                                                                               |
| UART over USB              | USB-B, system control                                                                          |
| USB                        | USB 2 x USB-A, storage & FW upgrade                                                            |
| Ethernet                   |                                                                                                |
| RS232                      | DB25 shared connector, system control                                                          |
| Interlock/ External RF Off | GPIO DB25 shared connector, 8 x output & 8 x input, all optically isolated                     |
| Analogue voltage output    | DB25 shared connector, programmable logic/polarity DB25 shared connector, 4-channel 0-5V range |

### ENVIRONMENTAL

|                   |                                          |
|-------------------|------------------------------------------|
| Altitude          | 15,000 ft / 4,420m AMSL                  |
| Temperature range | 0 to +45°C working. -10 to +50°C storage |
| Humidity          | 95% @ 35°C, non-condensing               |

### CERTIFICATION

|                  |
|------------------|
| FCC/IC Certified |
|------------------|



# AQUABROADCAST

Aqua Broadcast was formed by a diverse and experienced team of people with extensive Broadcast and electronics experience. We love Broadcast just as much as you do, and we saw the need to do things differently to all our competitors.

With an international presence and offering multi-lingual staff, Aqua Broadcast has positioned itself as a dynamic and innovative company, driven by its passion for Broadcast and Studio products.

At our core are our customers. We focus on designing and building products for engineers and station owners who demand reliability, ease of use, with cutting-edge design and features. Listening to customer's ideas, feedback and success stories allows us to build products that are feature rich, reliable as well as easy to use.

Our strategically located offices worldwide mean you are never out of touch due to time zones. Sales and support are available round the clock. Whether it's a phone call, or email we are always with you every step of the way.

For details of your local dealer or Distributor, please refer to our [website](#) or contact us. The purchaser will be responsible for all import taxes, customs, duties, freight costs and insurance.

## Warranty Information

At Aqua Broadcast Ltd, we are devoted to building the highest quality products and the never-ending pursuit of providing a better experience to our customers.

Our warranty statements are a continued commitment to providing reliable solutions with our technologies. All Aqua Broadcast Ltd benefit from a 2 year Manufacturer's Warranty. Further information on the Warranty can be seen in each products user manual, or by contacting us.

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